Record of Modification

Phase 1 Site Characterization Sampling and Analysis Plan Field Activities
Columbia Fall Aluminum Company RI/FS
Phase 1 SAP MOD #4

Instructions to Requester: **Submit to Roux RI Manager or Roux RI/FS Project Manager**
Roux RI Manager will maintain legible copies in a binder that can be accessed by personnel.

Project Work Plan/QAPP (check one)**:**

[X] 2015 Phase 1 SAP

[ ] SOP (Title, # and approval date): _____

Requester: USEPA / CDM Smith Date: 7/21/2016

Applicable section of SAP/SOP:

SAP Section 4.6.2: Operational Area Soil Investigation

Description of Modification:

Field processing of soil samples collected using incremental sampling methodology (ISM) will be discontinued. Instead, the samples (approximately 1 kilogram bulk samples, comprised of 32 aliquots from each DU) will be shipped to Test America Laboratories where the samples will be pre-processed and prepared in accordance with their Standard Operating Procedure for ISM samples. In addition, it was agreed that moving forward the team will be using the "wedge" approach as described in the ISM guidance to obtain representative aliquots from the Geoprobe cores obtained at each of the 32 borings locations that make up each DU.

The "wedge" approach is defined in the ITRC February 2012 technical and regulatory guidance document titled "Incr*emental Sampling Methodology*" and discussed in detail in the Roux SOP 5.12 titled Incremental Soil Sampling. As written in the SOP, "soil should be collected using the "wedge" approach as described in the ITRC guidance. A wedge of soil must be taken from the entire length of the targeted depth interval. Target intervals to be collected will be pre-determined during the planning process. Removing a wedge of soil across the length of a larger core to encompass the entire depth interval rather than collecting the entire core depth interval as a whole, constitutes the mass of an individual increment of an ISM sample. Individual wedges, approximately 1 ounce each, from 30 or more separate DU cores are then collected to form the complete subsurface ISM bulk sample."

Rationale for Modifications / Potential Implications of Modifications:

Based upon observations conducted by CDM Smith oversight personnel, USEPA and CDM Smith were concerned that field sampling and processing of the ISM soil samples being conducted by Roux/Hydrometrics personnel was not in conformance with the ITRC ISM guidance referenced in the work plan. Specifically, CDM Smith personnel were concerned over the possibility for a potential bias because the field processing did not include drying and breaking up of soil aggregates, and sieving, as would be done in the lab processing of ISM samples. CDM Smith was concerned not only that there may be a potential bias introduced by field processing, but that smaller soil particles may have settled upon hand mixing the soil, or that subsamples were not collected in accordance with ITRC ISM guidance resulting in a sample not representative of the specified sampling area.

15 of 43 Decision Unit (DU) grids had been sampled using the field processing approach that will be discontinued. It was agreed that Roux/Hydrometrics would resample three of the DUs (i.e., 20 percent resampling) using the wedge sampling and laboratory processing approach described above. This resampling will allow comparison of the results from the two methods, and for assessment of whether or not the initial sampling approach could have resulted in a low or high bias relative to the sampling and processing methods to be followed henceforth. As requested by CDM Smith, the specific grids to be resampled will be:

- Grid 2 – Encompasses the south part of the former drum storage area where passive soil gas sampling indicated the presence of contamination.
- Grid 6 – Located down gradient of the wet scrubber sludge pond and the location of the previously collected DUP and MS/MSD samples.\
- Grid 8 – Located down gradient of the east landfill leachate pond.

Duration of Modification (Check one):

[ ] Temporary
Date(s) _____
Sample Numbers _____

[X] Permanent (Proposed Text Modification Section) 7/21/2016
Effective Date:

Proposed Text Modifications in Associated Document:

This form serves to document the change as described above, no document revisions are proposed.

Any future SAPs proposing to use ISM sampling will specifically detail field sampling and lab processing techniques in conformance with changes described above. The Roux SOP 5.12 Incremental Soil Sampling, and any future SOPs referencing Incremental Soil Sampling, will be modified to include the agreed upon sampling approach if future sampling is to be conducted.

Data Quality Indicator (check one) – Please reference definitions on next page for direction on selecting data quality indicators:

[ ] **Not Applicable** [ ] **Reject** [X] **Low Bias*** [ ] **Estimate** [X] **High Bias** [ ] **No Bias**

*NOTE: Potentially applies to previously collected samples. To be further evaluated based upon results of resampling noted above. In order to determine if re-sampling should occur in the decision units that have not yet been re-sampled, the analytical results for decision units that have not been re-sampled should be adjusted such that the result accounts for the variability between sampling methodologies and the limited re-sampling of the DUs and then compared relative to screening thresholds. In order to make this adjustment, the maximum RPD for the decision units that have been re-sampled should be determined on a chemical by chemical basis. This maximum RPD for each chemical should be increased by 10% to account for the limited re-sampling and unknown realm of uncertainty. The original result for the DUs should be increased by this percentage (maximum RPD% +10%). If this adjusted value exceeds the minimum of the applicable human health or ecological screening values for a depth interval, and would not have prior to the adjustment, re-sampling of the entire interval according to the current protocol is required.

Roux Project Manager Approval: Andrew Baris  Date: 7/21/2016
(Roux RI/FS Project Manager or designate)

EPA Review and Approval: Mike Cirian Date:
(USEPA RPM or designate)

DATA QUALITY INDICATOR DEFINITIONS

Reject – Samples associated with this modification form are not useable. The conditions outlined in the modification form adversely affect the associated sample to such a degree that the data are not reliable.

Low Bias – Samples associated with this modification form are useable, but results are likely to be biased low. The conditions outlined in the modification form suggest that associated sample data are reliable, but estimated low.

Estimate – Samples associated with this modification form are useable, but results should be considered approximations. The conditions outlined in the modification form suggest that associated sample data are reliable, but estimates.

High Bias – Samples associated with this modification form are useable, but results are likely to be biased high. The conditions outlined in the modification form suggest that associated sample data are reliable, but estimated high.

No Bias – Samples associated with this modification form are useable as reported. The conditions outlined in the modification form suggest that associated sample data are reliable as reported.